many, Canada, Finland, Switzerland, Greece, Siam, Sweden, France, Great Britain and the United States all reported progress made in their countries.

PRESIDENT'S ADDRESS

The text of President Coolidge's address follows:

Members of the Conference:

This year will mark the first quarter-century of the history of human flight. It has been a period of such great importance in scientific development that it seems fitting to celebrate it with appropriate form and ceremony. For that purpose this conference has been called and to the consideration of the past record and future progress of the science of aeronautics in behalf of the government and people of the United States I bid you welcome.

Twenty-five years ago at Kittyhawk, N. C., occurred an event of tremendous significance. It was the first extended flight ever made by man in a power-driven, heavier-than-air machine. How more appropriately could we celebrate this important anniversary than by gathering together to consider the strides made throughout the world in the science and practice of civil aeronautics since that day, and to discuss ways and means of further developing it for the benefit of mankind.

Others, whose names will long be remembered had done much to solve the problem, but it remained for the able, persistent and modest brothers from Dayton to demonstrate finally the possibility of a machine raising itself by its own power and carrying a man in sustained flight.

ORVILLE WRIGHT

..Human flight with wings, which had intrigued the imagination since the beginning of time.. became. a practical reality on the day that the airplane of Wilbur and Orville Wright rose from. the. wind-swept dunes of the Atlantic Coast. The elder brother lives with us only in memory, but Orville Wright, who piloted that first plane, is still actively interested in that science. We are glad to have him as one of our delegates to this conference. ..... .

No achievement of man in the progress of civilization has had a more rapid expansion. In the early days the ability to fly was ascribed to gods and demigods, to spirits and supernatural and mythical beings, both of the human and animal family.

Pegasus, the winged horse, and Daedalus and Icarus are two of the innumerable examples which come readily to mind. The yearning to fly probably always has been in the human breast. But for centuries its fulfillment was considered as visionary, unattainable. Even within our memory utter impossibility was expressed by saying "might as well try to fly."

FLYING SCIENCE

There is a wide difference between the romance of flying and aeronautics as a science. Archytas, Greek mathematician and mechanician of the first half of the Fourth Century B.C., made a flying pigeon. This seems to be the earliest authentic record of mechanical flying.

Leonardo Da Vinci, artist and scientist extraordinary, who lived in Italy over 400 years ago, left some interesting treatises and drawings on the principles of human flying. It was not until 1783, however, that a man was actually lifted from the ground and carried along in the air for a considerable distance. The vehicle was a hot-air balloon, devised by the ontgolfier brothers, paper makers of Ausgerne, France.

One of them was invited to address the Royal Academy of Science and ascents were made for the King and Queen. In 1852 a Frenchman built a dirigible balloon, propelled by steam, but further progress was delayed until the development of the internal combustion engine. Alberto Santos Dumont, brilliant young Brazilian, began in Paris in 1898 to construct a navigable balloon. About the same time, in Germany, Count Von Zeppelin started to work out his rigid airship. Only recently have we welcomed here the latest example of his skill.

HEAVIER-THAN-AIR

In the meantime—beginning with Cayle, Englishman and "father of aerodynamics," who died in 1857 and continuing down through Henson and Stringfellow, Maxim, Ader, Lilienthal and Langley (of Washington)—scientists were gradually, with gliders and other devices working out the problem of a heavier-than-air machine.

With genius, indomitable perseverance and a will to overcome obstacles the Wrights, mindful of what had gone before, applied themiseives to the solution of the problem. They experimented at Kittyhawk for three seasons and in the fourth, on December 17, 1903, success crowned their efforts. I understand the delegates to this conference will visit this historic spot on Monday, the exact day of the anniversary, to pay tribute to their achievement. That first flight lasted only twelve seconds.

Three more were made the same day. One of fifty-nine seconds, carried the plane a distance of 852 feet. It was wrecked by the wind and tests ended for the time. Further experiments were made in Dayton in 1904 and 1905.

PROGRESS MADE

In the latter year a Wright plane traveled for twenty-four miles at the rate of thirty-eight miles an hour. Three years later one was bought by the War Department, our government being the first to utilize this new device.

Other countries took up the idea and for a period rather outstripped us in flying. The crossing of the English Channel by the Frenchman, Bleriot, considered an astounding feat, was made in 1909. Demands of the World War brought about rapid advance in both the science and the practice and in the production of equipment. After the Armistice one after the other came the daring flights to annihilate space and time including the thrilling and solitary journey from New York to Paris by our own Lindbergh in 1927.

It is to the development of aeronautics as an aid to the peaceful pursuits of transportation, of commerce and of trade that this conference is to direct its attention. We are making a reality of the wonderful vision of Tennyson, who in his "Locksley Hall" wrote in 1842:

For I dipt into the future, far as human eye could see,
Saw the vision of the world and all the wonder that would be;
Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bales.

PASSENGER LINES

After the war European nations began to develop aeronautics as a part of their transportation systems. Passenger lines with heavy government subsidies were established between principal cities.

In America during the war 10,000 pilots were taught to fly; hundreds of aeronautic engineers and designers were trained; nearly 17,000 planes were manufactured by thousands of artisans who became skilled in aircraft production in many new factories.

All of this was an important foundation for building up of civil aeronautics. Prior to this period our attention had been directed to the use of the airplane as a carrier of mail. From 1912 the Postoffice Department sought money to establish air-mail lines, but not until 1918 was a special appropriation secured.

In May of that year between Washington and New York the first regular route was established. This service has been rapidly expanded, until now we have more than twenty-two mail routes with a daily mileage of nearly 31,000 miles. The air-mail poundage for January, 1926, was 23,000 pounds. In October this year 467,422 pounds were carried, as compared with 423,838 in the previous month. Reduction in the postal rates last July doubled the amount carried inside of thirty days.

OFFICE CREATED

In 1926 this government officially recognized the importance of flying by establishing the post of assistant secretary for aeronautics in each of the War, the Navy and the Commerce departments. Since then we have made remarkable progress. Then the value of the aeronautic industry in the United States was placed at less than $5,000,000. Today it is said to be in excess of $150,000,000. In 1925 the production of aircraft was valued at about $13,000,000; for 1928 the estimate is over $50,000,000.

For the air activities of the Department of Commerce we spent in 1927 more than $800,000; this year over $3,500,000, and the estimate for 1929 is just under $5,500,000.

Aeronautics have been rapidly advanced in other parts of the world as well. Nearly half of the 70,000 miles of air routes regularly operated in the world are in international air services, connecting important cities. Approximately 10,500 are in Latin America and about 5000 in Australia. Some have been in operation for several years.

Among the new services opened in 1928 are the Peruvian Navy line over the 6000 miles between Lima and Talara and the Parranquillia-Guayaquil, Nuevo-Laredo, Dakar-Buenos Aires and Montreal to New York lines. Additional routes are being planned between the United States and the West Indies, South America and Mexico and Australia and Canada. Important routes being considered are between the Netherlands an dthe Netherland East Indies and between Great Britain and Australia.

From incomplete reports it is indicated that about 15,000,000 miles were flown on European air services alone in 1927, more than 200,000 passengers carried and 10,000,000 pounds of luggage and goods and 3,000,000 pounds of mail. An average of nearly 75,000 miles daily were flown.

It is estimated that these figures will be increased from 25 to 33 per cent for 1928. Most of the European lines have government subsidies. The efficient way in which they are operated has resulted in increasingly better financial reports.

Regular flying in the United States beginning with a short mail line has increased until this year there are approximately 15,500,000 miles of airways, on which during the first six months of the year nearly 3,250,000 miles were flown on regular schedule.

SAFETY FACTOR

The daily mileage is estimated at 52,000 miles. We have three important international lines — New York to Montreal, Seattle to Vancouver, and Miami to Havana. Plans to extend the latter to the isthmus and South America are under way. The transportation companies have been taxed far beyond their equipment. A recent and important development sees the linking of the airplane and the transcontinental railways, providing a rapid journey between distant points. The airplane is used for fast day travel, with a transfer to a railroad for the night journey.

The nineteenth century was the railroad and steamboat age. The twentieth century will be known for the development of aeronautics and air transport. The airways of the world now have a greater mileage than the railways did in 1850, the twenty-fifth anniversary of the opening of the first railroad built by Stephenson.

Attention has recently been called to the safety of air passenger service compared with that of railroads in the early days. In 1927 the Imperial Airways, Ltd., carried 52,000 passengers over 2,500,000 miles without injury to a single passenger. In 1842 eight English railways carrying 10,503 passengers over 3,562,338 miles killed twenty-two and injured thirty-four others.

LINDBERGH TOUR

The country-wide tour of Lindbergh in the United States following his wonderful and spectacular flight to Paris did much to make America air-minded. A large amount of civil flying is now being done here and the civilian-owned aircraft number 6000.

The aeronautic branch of our Department of Commerce is vigilant, resourceful and progressive. It has inaugurated a comprehensive system of regulation and control of aircraft manufacture as well as operation. Airways are laid out over the best flying country and aids to flying such as beacons and weather reports are furnished.

Our transcontinental airway from New York to San Francisco is over 2600 miles long. More than 5000 additional miles of airways are under the jurisdiction of the Department of Commerce.

An air-information service is maintained and aeronautic research carried on through the Bureau of Standards.

Valuable co-operation is rendered in the establishment and equipment of airports. On October 1, 1387 ports were available for the use of the Army, Navy and commercial flyers. Municipalities and communities in all parts of the country, realizing that air contacts mean more and better business are planning airports. Nearly 900 more are now in prospect.

IMPORTANCE SHOWN

Air transport means much to the United States divided as it is in the West by lofty mountain ranges and deserts. In the early days it took six months to go from Missouri to the Pacific Coast. An airplane has traveled across the continent in less than twenty-four hours.

We are stretching out our arms through the air to Canada and to our other friends and neighbors in the south.

All nations are looking forward to the day of extensive regular and reasonably safe intercontinental and interoceanic transportation by airplane and airship. What the future holds out even the imagination may be inadequate to grasp. We may be sure, however, that the perfection and extension of air transport throughout the world will be of the utmost significance to civilization. While the primary aim of this industry is and will be commercial and economic and the prosperity of the world will be immeasurably advanced by it, indirectly but no less surely will the nations be drawn more closely together in bonds of amity and understanding.

This conference, I know, will have far-reaching results in the advancement of a science and industry which appeals both to the spirit and the reason of man and which, as the years go by will cement more and more firmly the bonds of international brotherhood.